IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of claims:

Claims 1-9 *(Canceled)*

10. *(Previously Presented)* Apparatus for the combined drug/electric-stimulation treatment of a cardiac muscle, comprising:

means for creating an electric potential between at least two points located in the vicinity of the cardiac muscle;

means for causing a non-excitatory DC electric current signal to flow between said at least two points;

means for controlling the start time, duration and magnitude of the electric current signal flowing between said at least two points; and

means for superimposing on the electric current signal one or more waveforms of given frequency and amplitude, thereby to generate a complex signal.

11. *(Previously Presented)* Apparatus according to claim 10, comprising:

means for creating an electric potential between at least a

pair of electrodes in the vicinity of the cardiac muscle at at least two root locations;

means for causing a non-excitatory electric current signal to flow between said at least two root locations;

means for controlling the start time, duration and magnitude of the electric current signal flowing between said at least two root locations; and

means for superimposing on the electric current signal one or more waveforms of given frequency and amplitude, thereby to generate a complex signal.

12. *(Previously Presented)* Apparatus comprising circuitry for creating a non-excitatory electric potential between at least two points located in the vicinity of a muscle, comprising circuitry for controlling the start time and/or the duration of the electric potential generated between said at least two points which is synchronized to heart activity, said circuitry not operating at every beat of the heart.

13. *(Previously Presented)* Implantable apparatus comprising circuitry for causing a non-excitatory electric current to flow between at least two points located in the vicinity of a muscle and circuitry for controlling the start

time and/or duration of the electric current, wherein said circuitry for controlling does not operate at every beat of the heart.

14. *(Previously Presented)* Apparatus for selectively and reversibly reducing the oxygen consumption of an area of a muscle, comprising circuitry for creating a non-excitatory electric potential between at least two points located in the vicinity of the muscle, and comprising circuitry for controlling the start time and/or duration of the electric current flowing between said at least two points which is synchronized to heart activity, said circuitry not operating at every beat of the heart.

15. *(Previously Presented)* Apparatus for reducing the contraction force of a muscle, comprising:

means for creating an electric potential between at least two points located in the vicinity of the muscle;

means for causing a non-excitatory DC electric current to flow between said at least two point, if desired; and

means for controlling the start time, duration and magnitude of the non-excitatory electric potential and/or of the non-excitatory electric current flowing between said at least

two points.

16. *(Previously Presented)* Apparatus according to claim 15, comprising:

means for creating an electric potential between at least a pair of electrodes in the vicinity of the muscle at at least two root locations;

means for causing a non-excitatory DC electric current to flow between said at least two root locations when desired; and

means for controlling the start time, duration and magnitude of the non-excitatory electric potential and/or of the non-excitatory electric current flowing between said at least two root locations.

17. *(Previously Presented)* A method for reducing the contraction force of a muscle, comprising creating a non-excitatory electric potential between at least two points located in the vicinity of the muscle, and controlling one or more of the parameters consisting of start time, duration, magnitude and polarity of the non-excitatory electric potential created between said at least two points.

18. *(Previously Presented)* A method for reducing the contraction force of a muscle, comprising causing a non-

excitatory electric current to flow between at least two points located in the vicinity of the muscle, and controlling one or more of the parameters consisting of start time, duration, magnitude and polarity of the non-excitatory electric current flowing between said at least two points.

19. *(Previously Presented)* A method according to claim 17 or 18, wherein the muscle is a cardiac muscle.

20. *(Previously Presented)* A method according to claim 18, wherein the non-excitatory electric current is a DC current.

21. *(Previously Presented)* A method according to claim 20, further comprising generating a complex signal by superimposing on the DC signal one or more waveforms of given frequency and amplitude.

22. *(Previously Presented)* A method according to claim 18, wherein the flow of the non-excitatory DC electric current is synchronized to heart activity.

23. *(Previously Presented)* A method according to claim 22, wherein the non-excitatory DC electric current flows not at every beat of the heart.

24. *(Presently Amended)* A method for performing heart treatment, comprising reducing the contraction force of a treated area of the cardiac muscle, by creating a non-excitatory electric potential between at least two points located in the vicinity of the muscle, and controlling one or more of the parameters consisting of start time, duration, magnitude and polarity of the non-excitatory electric potential created between said at least two points, thereby to obtain the desired reduction in muscle contraction at the treated heart area and thereafter performing ~~surgery~~ treatment thereon.

25. *(Presently Amended)* A method for performing heart treatment, comprising reducing the contraction force of a treated area of the cardiac muscle, by causing a non-excitatory electric current to flow between at least two points located in the vicinity of the muscle, and controlling one or more of the parameters consisting of start time, duration, magnitude and polarity of the non-excitatory electric current flowing between said at least two points, thereby to obtain the desired reduction in muscle contraction at the treated heart area and thereafter performing ~~surgery~~ treatment thereon.

26. *(Previously Presented)* A method according to claim 24

or 25, wherein the heart surgery is a bypass operation.

27. *(Previously Presented)* A method according to claim 24 or 25, wherein the heart surgery is a minimally invasive cardiac operation.

28. *(Previously Presented)* A method for promoting the healing of the cardiac muscle after myocardial infarct, comprising creating a non-excitatory electric potential between at least two points located in the vicinity of the muscle, and controlling one or more of the parameters consisting of start time, duration, magnitude and polarity of the non-excitatory electric potential created between said at least two points, said electric potential being of an intensity and polarity suitable to obtain the desired reduction in muscle contraction at the affected heart area.

29. *(Previously Presented)* A method for promoting the healing of the cardiac muscle after myocardial infarct, comprising causing a non-excitatory electric current to flow between at least two points located in the vicinity of the muscle, and controlling one or more of the parameters consisting of start time, duration, magnitude and polarity of the non-excitatory electric current flowing between said at least two

points, said electric current being of an intensity and polarity suitable to obtain the desired reduction in muscle contraction at the affected heart area.

30. *(Previously Presented)* A method for selectively and reversibly reducing the oxygen consumption of an area of a muscle, comprising causing a non-excitatory electric current to flow between at least two points located in the vicinity of the muscle, and controlling one or more of the parameters consisting of start time, duration, magnitude and polarity of the non-excitatory electric current flowing between said at least two points, said electric current being of an intensity and polarity suitable to obtain the desired reduction in oxygen consumption at the affected heart area.

31. *(Previously Presented)* A method for selectively and reversibly reducing the oxygen consumption of an area of a muscle, comprising creating a non-excitatory electric potential between at least two points located in the vicinity of the muscle, and controlling one or more of the parameters consisting of start time, duration, magnitude and polarity of said non-excitatory electric potential, said electric potential being of an intensity and polarity suitable to obtain the desired

reduction in oxygen consumption at the affected heart area.

32. *(Previously Presented)* A method for treating congenital or acquired hypertrophic cardiomyopathy, comprising reducing the contraction force of the heart muscle by creating a non-excitatory electric potential between at least two points located in the vicinity of the muscle, and controlling one or more of the parameters consisting of start time, duration, magnitude and polarity of the non-excitatory electric potential created between said at least two points, said electric potential being of an intensity and polarity suitable to obtain the desired reduction in muscle contraction.

33. *(Previously Presented)* A method for treating congenital or acquired hypertrophic cardiomyopathy, comprising reducing the contraction force of the heart muscle by causing a non-excitatory electric current to flow between at least two points located in the vicinity of the muscle, and controlling one or more of the parameters consisting of start time, duration, magnitude and polarity of the non-excitatory electric current flowing between said at least two points, said electric current being of an intensity and polarity suitable to obtain the desired reduction in muscle contraction.

34. *(Presently Amended)* A method for performing cardiac treatment, comprising reducing the contraction force of the area of the cardiac muscle to be ~~ablated~~ treated, by creating a non-excitatory electric potential between at least two points located in the vicinity of the muscle, and controlling one or more of the parameters consisting of start time, duration, magnitude and polarity of the non-excitatory electric potential created between said at least two points, thereby to obtain the desired reduction in muscle contraction at the heart area to be ~~ablated~~ treated, and thereafter performing the ~~ablation~~ treatment thereon.

35. *(Presently Amended)* A method for performing cardiac treatment, comprising reducing the contraction force of the area of the cardiac muscle to be ~~ablated~~ treated, by causing a non-excitatory electric current to flow between at least two points located in the vicinity of the muscle, and controlling one or more of the parameters consisting of start time, duration, magnitude and polarity of the non-excitatory electric current flowing between said at least two points, thereby to obtain the desired reduction in muscle contraction at the heart area to be ~~ablated~~ treated, and thereafter performing the ~~ablation~~

treatment thereon.

36. *(Previously Presented)* A method according to any one of claims 25, 29, 30, 33 or 35, wherein the non-excitatory electric current is a DC current.

37. *(Previously Presented)* A method according to claim 36, further comprising generating a complex signal by superimposing on the DC signal one or more waveforms of given frequency and amplitude.

38. *(Previously Presented)* A method according to any one of claims 25, 29, 30, 33 or 35, wherein the flow of the non-excitatory DC electric current is synchronized to heart activity.

39. *(Previously Presented)* A method according to claim 38, wherein the non-excitatory DC electric current flows not at every beat of the heart.

40. *(Previously Presented)* A method according to any one of claims 25 and 28 to 33, wherein the cardiac muscle contractility is increased at locations other than the treated location.

41. *(Previously Presented)* A method for the interim treatment of a heart in need of reducing oxygen consumption, comprising reducing the contraction force of the heart muscle by creating a non-excitatory electric potential between at least two points located in the vicinity of the muscle, of an intensity and polarity suitable to obtain the desired reduction in muscle contraction at the treated heart area, thereby reducing the oxygen consumption of the heart.

42. *(Previously Presented)* A method for the interim treatment of heart in need of reducing oxygen consumption, comprising reducing the contraction force of a the heart muscle by causing a non-excitatory electric current to flow between at least two points located in the vicinity of the muscle, of an intensity and polarity suitable to obtain the desired reduction in muscle contraction at the treated heart area, thereby reducing the oxygen consumption of the heart.

43. *(Previously Presented)* A method according to claim 42, wherein the non-excitatory electric current is a DC current.

44. *(Previously Presented)* A method according to claim 43, further comprising generating a complex signal by superimposing on the DC signal one or more waveforms of given frequency and

amplitude.

45. *(Previously Presented)* A method according to claim 42, wherein the flow of the non-excitatory DC electric current is synchronized to heart activity.

46. *(Previously Presented)* A method according to claim 45, wherein the non-excitatory DC electric current flows not at every beat of the heart.

47. *(Previously Presented)* A method for reducing the contraction force of a muscle, comprising:

providing means for creating an electric potential between at least two points located in the vicinity of the muscle;

providing means for causing a non-excitatory DC electric current to flow between said at least two point;

providing means for switching the current polarity between said at least two points; and

providing means for controlling the start time, duration and magnitude of the electric current flowing between said at least two points.

48. *(Presently Amended)* A method according to ~~claim 40~~ claim 47, comprising:

providing an electric potential between at least a pair of electrodes in the vicinity of the muscle at at least two root locations;

causing a non-excitatory DC electric current to flow between said at least two contacting locations;

providing means for switching the current polarity between said root locations; and

controlling the start time, duration and magnitude of the electric current flowing between said at least two root locations, so as to obtain the desired reduction in muscle contraction.

49. *(Previously Presented)* A method according to claim 47 or 48, further comprising generating a complex signal by superimposing on the DC signal one or more waveforms of given frequency and amplitude.

50. *(Previously Presented)* A method according to claim 47 or 48, wherein the means for causing a non-excitatory DC electric current to flow, are synchronized to heart activity.

51. *(Previously Presented)* A method according to claim 50, wherein the means for causing a non-excitatory DC electric current to flow operate not at every beat of the heart.

52. *(Previously Presented)* Apparatus for performing heart treatment, comprising circuitry for creating a non-excitatory electric potential between at least two points located in the vicinity of the heart muscle and circuitry for controlling the start time and/or duration of electric current flowing between said at least two points which is synchronized to heart activity, wherein said circuitry for controlling does not operate at every beat of the heart.

53. *(Previously Presented)* Apparatus for promoting the healing of the hibernated area of the cardiac muscle after myocardial infarct, comprising circuitry for creating a non-excitatory electric potential between at least two points located in the vicinity of the muscle, comprising circuitry for controlling the start time and/or duration of the electric current flowing between said at least two points which is synchronized to heart activity, said circuitry not operating at every beat of the heart.

54. *(Previously Presented)* Apparatus for promoting the healing of an ischmeic area of the cardiac muscle, comprising circuitry for creating a non-excitatory electric potential between at least two points located in the vicinity of the

muscle, comprising circuitry for controlling the start and/or duration of the electric current flowing between said at least two points which is synchronized to heart activity, said circuit not operating at every beat of the heart.

55. *(Previously Presented)* Apparatus for treating congenital or acquired hypertrophic cardiomyopathy, comprising circuitry for creating a non-excitatory electric potential between at least two points located in the vicinity of the muscle, comprising circuitry for controlling the start time and/or duration of the electric current flowing between said at least two points which is synchronized to heart activity, said current not operating at every beat of the heart.

56. *(Previously Presented)* Apparatus for aiding in performing cardiac treatment, comprising circuitry for creating a non-excitatory electric potential between at least two points located in the vicinity of the muscle, comprising circuitry for controlling the start time and/or duration of the electric current flowing between said at least two points which is synchronized to heart activity, said circuitry not operating at every beat of the heart.

57. *(Previously Presented)* Apparatus according to any one

of claims 14, 52, and 53-56, wherein the non-excitatory electric current is a DC current, further comprising signal generation circuitry for superimposing on the DC signal one or more waveforms of given frequency and amplitude, thereby to generate a complex signal.

58. *(New)* Apparatus for heart pacing with cardiac output modification, comprising:

one or more electrodes adapted to apply electrical signals to cardiac muscle segments;

signal generation circuitry adapted to apply an excitatory electrical pulse to at least one of the one or more electrodes to pace the heart and a non-excitatory stimulation pulse of a magnitude and at a timing at which it is unable to generate a propagating action potential to at least one of the one or more electrodes to modify the cardiac output; and

at least one pressure sensor which senses cardiac activity, wherein the sensor is coupled to the signal generation circuitry, which generates the pulses responsive thereto.

59. *(New)* Apparatus for heart pacing with cardiac output modification, comprising:

one or more electrodes adapted to apply electrical signals to cardiac muscle segments;

signal generation circuitry adapted to apply an excitatory electrical pulse to at least one of the one or more electrodes to pace the heart and a non-excitatory stimulation pulse of a magnitude and at a timing at which it is unable to generate a propagating action potential to at least one of the one or more electrodes to modify the cardiac output; and

at least one sensor which senses cardiac activity, wherein the sensor is coupled to the signal generation circuitry, which generates the pulses responsive thereto.

60. *(New)* Apparatus for heart pacing with cardiac output modification, comprising:

one or more electrodes adapted to apply electrical signals to cardiac muscle segments;

signal generation circuitry adapted to apply an excitatory electrical pulse to at least one of the one or more electrodes to pace the heart and a non-excitatory stimulation pulse of a magnitude and at a timing at which it is unable to generate a propagating action potential to at least one of the one or more electrodes to modify the cardiac output; and

at least one oxygen sensor which senses cardiac activity, wherein the sensor is coupled to the signal generation circuitry, which generates the pulses responsive thereto.

61. *(New)* A method for heart pacing with modification of cardiac contraction, comprising the steps of:

(a) implanting a pacing electrode in a first chamber of a subject's heart;

(b) implanting a non-excitatory stimulation electrode in another chamber of the subject's heart;

(c) conveying an excitatory electrical pulse to at least one of the electrodes to pace the heart; and

(d) conveying a non-excitatory stimulation pulse of a magnitude and at a timing at which it is unable to generate a propagating action potential to at least one of the electrodes to modify the cardiac contraction.

62. *(New)* A method for heart pacing with modification of cardiac contraction, comprising the steps of:

(a) implanting at least one non-excitatory stimulation electrode in each of a plurality of chambers of a subject's heart;

(b) conveying an excitatory electrical pulse to at least one of the electrodes to pace the heart; and

(c) conveying a non-excitatory stimulation pulse of a magnitude and at a timing at which it is unable to generate a propagating action potential to at least one of the electrodes to modify the cardiac contraction.

63. *(New)* A method for heart pacing with modification of cardiac contraction, comprising the steps of:

(a) fixing at least one electrode to the epicardium of a subject's heart;

(b) conveying an excitatory electrical pulse to at least one of the electrodes to pace the heart; and

(c) conveying a non-excitatory stimulation pulse of a magnitude and at a timing at which it is unable to generate a propagating action potential to at least one of the electrodes to modify the cardiac contraction.

64. *(New)* A method for heart pacing with modification of cardiac contraction, comprising the steps of:

(a) applying one or more electrodes to a subject's heart;

(b) conveying an excitatory electrical pulse to at least one of the one or more electrodes to pace the heart;

(c) conveying a non-excitatory stimulation pulse of a magnitude and at a timing at which it is unable to generate a propagating action potential to at least one of the one or more electrodes to modify the cardiac contraction; and

(d) applying a sensor which senses cardiac activity to the subject's body,

wherein conveying the non-excitatory stimulation pulse comprises generating a pulse responsive to the activity.

65. *(New)* A method for heart pacing with modification of cardiac contraction, comprising the steps of:

(a) applying one or more electrodes to a subject's heart;

(b) conveying an excitatory electrical pulse to at least one of the one or more electrodes to pace the heart;

(c) conveying a non-excitatory stimulation pulse of a magnitude and at a timing at which it is unable to generate a propagating action potential to at least one of the one or more electrodes to modify the cardiac contraction; and

(d) applying a pressure sensor which senses cardiac activity to the subject's body,

wherein conveying the non-excitatory stimulation pulse comprises generating a pulse responsive to the activity.

66. *(New)* A method for heart pacing with modification of cardiac contraction, comprising the steps of:

(a) applying one or more electrodes to a subject's heart;

(b) conveying an excitatory electrical pulse to at least one of the one or more electrodes to pace the heart;

(c) conveying a non-excitatory stimulation pulse of a magnitude and at a timing at which it is unable to generate a propagating action potential to at least one of the one or more electrodes to modify the cardiac contraction; and

(d) applying an oxygen sensor which senses cardiac activity to the subject's body,

wherein conveying the non-excitatory stimulation pulse comprises generating a pulse responsive to the activity.